

Application No. 09/924,955  
Inventor: Una QUINLAN  
Application Filed: August 8, 2001  
Response and Amendment to Office Action mailed September 08, 2004

**Listing of Claims:**

Claim 1 (currently amended) A method of diagnosing, in a network comprising two devices connectable by a link, the type of failure of the connection between the devices, said method comprising:

connecting the two devices together at least one of the devices including a plurality of registers, each register being adapted to store data about one or more types of said failure, running an auto-negotiation sequence, detecting said failure and passing signals relating to that failure to the relevant register(s), interrogating the or each register, and determining the type of said failure from a plurality of types of failure.

Claim 2 (original) A method as claimed in claim 1 in which the step of determining the type of said failure includes the step of determining the data in the relevant register(s) and from said data, indicating the type of said failure and/or a proposed course of action.

Claim 3 (original) A method as claimed in claim 1 in which there is provided a visual display unit and the step of determining the type of said failure includes the step of determining the data in the relevant register(s) and from said data, indicating the type of said failure and/or a proposed course of action on said visual display unit.

Claim 4 (original) A method as claimed in claim 1 in which said failure comprises a loss of light.

Claim 5 (original) A method as claimed in claim 1 in which said failure comprises a bit/word alignment failure.

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Claim 6 (original) A method as claimed in claim 1 in which said failure comprises a loss of synchronisation during auto-negotiation.

Claim 7 (original) A method as claimed in claim 1 in which said failure comprises an auto-negotiation protocol hang during base page exchange.

Claim 8 (original) A method as claimed in claim 1 in which said failure comprises an auto-negotiation protocol hang during next page exchange.

Claim 9 (original) A method as claimed claim 1 in which said failure comprises an auto-negotiation protocol (repeated) restart due to initiation of a "break link".

Claim 10 (original) A method as claimed in claim 1 in which the steps of interrogation and of determining are controlled by a program on a device in the network.

Claim 11 (original) A method as claimed in claim 1 in which the steps of interrogation and of determining are controlled by a program on one of said devices.

Claim 12 (currently amended) A method as claimed in claim 1 in which said detection step is carried out by signal detector logic in ~~level B1~~ a data link/layer of the OSI protocol stack of one of said devices.

Claim 13 (currently amended) A method as claimed in claim 12 in which the link is a fibre optic signal and light is detected by a transceiver and the detector in ~~a sub-level of level B1~~ a data link/layer of the OSI protocol stack checks for an adequate power level on the light received at the transceiver.

Claim 14 (currently amended) A method as claimed in claim 12 in which said signal detector in ~~a sub-level of level B1~~ a data link/layer of the OSI protocol stack one of said

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devices deals with clock recovery, comma alignment and receive synchronisation so as to check the received signal frequency, encoding integrity and correct alignment of received signals.

Claim 15 (currently amended) A method as claimed in claim 12 in which said signal detector logic in ~~a sub-level of level B1 of a data link/layer of~~ the OSI protocol stack one of said devices includes a bit error counter to count symbol errors.

Claim 16 (original) A method as claimed in claim 15 in which said bit error counter is set at regular intervals, to provide bit error rate calculations.

Claim 17 (currently amended) A method as claimed in claim 12 in which said signal detector logic in ~~a sub-level of level B1 of a data link/layer of~~ the OSI protocol stack of one of said devices includes an auto negotiation state machine which deals with the exchange of one or more pages of information between the two devices, handles link restarts by the link partner, and reports the link state and hangs.

Claim 18 (new) A system for diagnosing, in a network comprising two devices connectable by a link, the type of failure of the connection between the devices, comprising:  
at least two device configured to connect together, at least one of the devices including a plurality of registers, each register being adapted to store data about one or more types of said failure;

wherein the system is configured to

run an auto-negotiation sequence;

detect said failure and passing signals relating to that failure to the relevant register(s);

interrogate the or each register; and

determine the type of said failure from a plurality of types of failure.

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**Claim 19 (new)**      The system of claim 18 wherein the system is further configured to determine the data in the relevant register(s) and from said data, indicate the type of said failure and/or a proposed course of action.

**Claim 20 (new)**      A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for diagnosing, in a network comprising two devices connectable by a link, the type of failure of the connection between the devices, said method comprising the steps of:

connecting the two devices together at least one of the devices including a plurality of registers, each register being adapted to store data about one or more types of said failure,  
running an auto-negotiation sequence,  
detecting said failure and passing signals relating to that failure to the relevant register(s),  
interrogating the or each register, and  
determining the type of said failure from a plurality of types of failure.